THERMAL REMEDIATION services inc.

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June 17, 2003

Mr. Arthur Bourlard
The Lockformer Company
711 Ogden Avenue
Lisle, IL 60532-1399

Subject: **Notification of Potential Hazards of the Electrical Resistance Heating Process at The Lockformer Company, Lisle, Illinois**

Dear Mr. Bourlard:

As you are aware, the Electrical Resistance Heating (ERH) system at The Lockformer Company (Lockformer), Lisle, Illinois will begin operating during the week of June 23, 2003. This letter is intended to serve as a notification of potential hazards involved with ERH operations at the site. Thermal Remediation Services (Thermal) requests that you forward a copy of this notification to all appropriate parties.

The ERH process applies electrical energy to buried electrodes on the west side and below the existing Lockformer facility in order to heat soil in the treatment area. This process presents two hazards that are particularly worthy of this reminder.

First, due to the potential for personnel working in the vicinity of the treatment area to encounter high voltages, a **"STRICT NO DIG"** policy should be put in place. This policy needs to require that no digging, drilling, or other invasive work be performed within or near the treatment area without first notifying Thermal personnel and completing a lockout/tagout of Thermal's Power Control Unit (PCU). The lockout/tagout procedures are included with this correspondence as Attachment 1. This NO DIG area needs to extend to a minimum of 50 feet surrounding the treatment area. This moratorium on digging will remain until ERH is complete at the site.

Second, all personnel need to be reminded that the temperature of soil and groundwater within and near the treatment area will be raised to the boiling point of water. Any work completed within the area that requires opening of wells, well-vaults, or other subsurface access points **may expose personnel to steam or to components that may present a burn risk**. Prior to performing any evolution that will require entry to these locations, the PCU should be locked out/tagged out and personnel should don appropriate safety clothing. This clothing should include, at a minimum: full face shield, gloves, and long sleeves. The generalized hot sampling procedures are included with this correspondence as Attachment 2.

Should you have any questions regarding this hazard notification, or if you would like further clarification, please feel free to contact me at (206) 283-2572.

Sincerely,

Thermal Remediation Services

Paul V. Bianco, PE
Project Manager

CC:

Mr. Ron St. John, Clayton Group Services, Inc.
Mr. Jeff Pope, Clayton Group Services, Inc.
Mr. Jerry Wolf, Thermal Remediation Services
Mr. Tom Powell, Thermal Remediation Services

Attachment 1

LOCK OUT/TAG OUT PROCEDURES

Safety-related work practices will be used to safeguard employees from injury while they are working on or near exposed electrical conductors or circuit paths that are, or can become, energized. The specific safety-related work practice shall be consistent with the nature of and extent of the associated electrical hazards.

Exposed energized electrical conductors or circuit paths to which an employee might be exposed will be put into an electrically safe work condition before an employee works on or near them, unless it can be demonstrated that de-energizing introduces additional or increased hazards or is infeasible due to equipment design or operational limitations.

Only personnel experienced and trained to operate or perform maintenance on the ERH remediation equipment or system support components are authorized to conduct the lock out/tag out procedures summarized below. The following procedures must be followed when the remediation system is being serviced.

Lock Out/Tag Out:

1. Prior to commencing lock out/tag out procedures, the SHSO or senior Thermal staff member on-site must be notified.
2. Prior to servicing equipment, turn off the disconnect switch on the electrical enclosure or the disconnect switch for the equipment, depending on which piece of equipment is being serviced.
3. Unlock the cover to the circuit box and turn off the disconnect switches to the specific equipment being repaired or maintained.
4. Lock the cover to the circuit box. Only the person who unlocked the circuit box cover should retain the key.
5. Attach a weatherproof label to the lock indicating the following information: name and signature of the individual who shut off the disconnect switches and is performing the maintenance on the equipment; time and date of lock out; and explanation of the work performed on the remediation equipment. Also, note the repair or maintenance being performed in the project logbook.

If work is to be performed in the electrode field which requires the PCU output to be locked and tagged, the following steps should be performed:

a. Notify Thermal personnel of the need to perform work within the ERH treatment area.
b. At the PCU computer operating screen, press the "Contactor Open" button.

c. Verify that the PCU contactor has opened by monitoring the output voltages and currents. All of these readings should drop to near zero.
d. On the PCU control panel, press the "Output Off" red mushroom button.
e. Remove the key from the mushroom button. This key should be kept by the senior worker in the field during the execution of the field work. This is the only key for this lockable switch, which prevents other personnel from activating the output.
f. Attach a weatherproof label to the lock indicating the following information: name and signature of the individual who shut off the disconnect switches and is performing the maintenance on the equipment; time and date of lock out; and explanation of the work performed on the remediation equipment. Also, note the repair or maintenance being performed in the project logbook.

An adequately rated voltage detector is used to test each phase conductor or circuit path to verify they are de-energized. Before and after each test, determine that the voltage detector is operating satisfactorily.

Where the possibility of induced or stored electrical energy exists, ground the phase conductors or electrical circuit parts before touching them. Where it could be reasonably anticipated that the conductors or circuit parts being de-energized could contact other exposed energized conductors or circuit parts, apply ground-connecting devices rated for the available fault duty.

Release From Lock Out/Tag Out:

1. The SHSO, or the senior Thermal staff member on-site, must be notified before removing the lock out/tag out devices.
2. Inspect the area to verify that the equipment has been returned to operational condition. All tools and equipment used to service the equipment should be accounted for and placed in a safe location and all guard systems reinstalled.
3. All personnel must move to positions away from any mechanical and/or pneumatic equipment prior to the removal of the lock out/tag out devices.
4. The lock out/tag out devices must be removed by the person who initially signed the lock out/tag out label.
5. The disconnect switches for the equipment should be turned on.
6. Lock the circuit box cover.
7. Turn on the disconnect switch(es) for the equipment and re-start the systems in accordance with the operation manuals.

If work was performed in the electrode field which required the PCU output to be locked and tagged, the following steps should be performed to reinstate the PCU output:

a. The SHSO, or the senior Thermal staff member on-site, must be notified before removing the lockout/tagout devices.
b. Remove the weatherproof label to the lock. This must be removed by the person who initially signed the lockout/tagout label.
c. On the PCU control panel, insert the key into the "Output Off" red mushroom button, turn it 90 degrees to the right and pull the button outward. Leave the key inserted in the "Output Off" red mushroom button.
d. At the PCU computer operating screen, press the "Contactor Closed" button.
e. Verify that the PCU contactor has closed by monitoring the output voltages and currents.

Attachment 2

Technical Memorandum
VOC Sampling of Hot Soils

Sample Validity of Hot Soils

In 1993, a thermal remediation of a former gasoline service station was completed at the Lawrence Livermore National Laboratory (LLNL). As part of this remediation, an innovative soil sample analysis technique called Bulk Thermal Desorption (BTD) was used. BTD uses helium to purge the entire soil core in a heated oven. The effluent vapors are then trapped and analyzed by conventional means.

In the course of evaluating BTD, LLNL injected the hot soil samples with a spike of TCE and chlorobenzene as the soil samples were collected. Although the principle intent of the spike was to evaluate the performance of BTD, a secondary effect is that the spike allowed LLNL to also evaluate the potential loss of VOCs during hot sample handling.

A total of 17 hot soil sample cores were spiked and the average spike recovery was 89% - this is generally considered to be good recovery. LLNL also tested the spiking procedure on other cores and concluded that the spike recovery "demonstrates that it just may not be possible to reliably spike a hot soil sample in the field." As a result of the spike tests, LLNL reported results for the hot soil sample analyses without attempting to apply any correction factors due to potential VOC losses during sample collection.

Due to this initial LLNL testing, subsequent thermal remediations have used hot sampling in order to evaluate remedial effectiveness, using appropriate measures to reduce the potential for VOC losses during sample handling.

Hot Soil Sampling Procedure

Post remediation soil samples will most likely be collected using a hydraulic push rig due to the shallow depth of sampling that is required. Hydraulic push sampling of hot soils is also inherently safer than auger sampling because hydraulic push will not require operators to handle hot soil cuttings. Although acetate liners are often used for hydraulic push core barrels at other sites, the temperature of the subsurface will require the use of stainless steel, brass, or Teflon™ core barrel liners.

Although the soil samples and core barrels will obviously be hot when extracted from the subsurface, past thermal remediation experience has indicated that standard work gloves or heavy-duty rubber gloves provide sufficient protection for the handling of hot push rods and soil core barrels.

Upon extracting the soil core barrel from the subsurface, the core barrel will be immediately capped using the standard barrel caps provided by the hydraulic push manufacturer and the entire core barrel will be placed on ice for cooling.

When the core barrel is cool (typically 5-15 minutes), the core barrel is removed from ice and a soil sub-sample is collected for analysis by the standard method. As in all soil sampling, care should be taken to select the analysis sub-sample from near the center of the core barrel where evaporative losses are minimized.